

No.

9300264

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Board of Regents, University
of Nebraska and USDA-ARS
Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Vista'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of July in the year of our Lord one thousand nine hundred and ninety-five

Attest:
[Signature]
Acting
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

[Signature]
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Board of Regents, University of Nebraska and Agricultural Research Service, USDA		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. NE87615	3. VARIETY NAME Vista
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Lincoln, Nebraska 68583-0745 Washington, D.C. 20250		5. PHONE (Include area code) 402-472-3906 202-720-3656	FOR OFFICIAL USE ONLY PVPO NUMBER <div style="font-size: 2em; text-align: center;">9300284</div> <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F I L I N G</div> <div> Date <div style="font-size: 1.5em;">Aug. 9, 1993</div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. </div> </div> </div>
6. GENUS AND SPECIES NAME Triticum aestivum L.	7. FAMILY NAME (Botanical) Graminae		
8. CROP KIND NAME (Common Name) Hard Red Winter Wheat	9. DATE OF DETERMINATION a) July, 1987 b) December, 1992	Filing and Examination Fee: <div style="font-size: 1.2em;">\$ 2325.00</div> Date <div style="font-size: 1.2em;">June 17, 1993</div>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation and U.S. Government Agency		Certificate Fee: <div style="font-size: 1.2em;">\$ 275.00</div> Date <div style="font-size: 1.2em;">May 8, 1995</div>	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Nebraska and District of Columbia	12. DATE OF INCORPORATION		
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			
Dr. D. W. Nelson, Dean and Director Agricultural Research Division, IANR-UNL Lincoln, Nebraska 68583-0704 Telephone: 402-472-2045		Dr. R. D. Plowman, Administrator USDA,ARS,9A Administration Bldg., Room 302-A Washington, D.C. 20250 PHONE (Include area code): 202-720-3656	

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☒ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)

☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☒ YES (If "YES," give names of countries and dates) United States, September, 1992

☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] Daneel W. Nelson	CAPACITY OR TITLE Dean & Director Nebr Ag Experiment Stat	DATE April 26, 1993
SIGNATURE OF APPLICANT [Owner(s)] R. D. Plowman	CAPACITY OR TITLE Administrator, Agriculture Research Service	DATE 5/13/93

'Vista' (P. I. 562653) Hard Red Winter Wheat Application

Exhibit A. Origin and Breeding History:

Vista is a selection from the cross NE68513/NE68457///'Centurk'/3/'Brule' which was made in 1981 by J. W. Schmidt. The pedigree of NE68513 is 'Warrior'///'Atlas 66'/'Comanche'/3/ Comanche/'Ottawa'. The pedigree of NE68457 is 'Ponca'/*2 'Cheyenne'/3/Illinois#1/'Chinese Spring' *2/'Triticum timopheevi'/4/ Cheyenne/'Tenmarq'///'Mediterranean'/'Hope'/3/Sando 60. The F₁ generation was grown in the greenhouse in 1982. The F₂ and F₃ generations were grown in bulk at Mead, Nebraska in 1983 and 1984 respectively. Random heads were chosen from the F₃ bulk and planted as head rows which were harvested in 1985. The F₃-derived F₅ family was harvested as a single observation plot in 1986. In 1987, Vista was grown in six locations in unreplicated trials in Nebraska. Vista was identified in these trials as NE87615. It has been tested in replicated trials from 1988 to present. In addition, it has been tested in the USDA Southern Regional Performance Nursery in 1990 and 1991. Vista was named and released in December, 1992 by the Nebraska Agricultural Experiment Station and the Agricultural Research Service, U.S. Department of Agriculture. The initial allocation of Foundation seed to certified growers was made in September, 1992.

Vista will be maintained by the Nebraska Agricultural Experiment Station with the following classes of seed: Breeder, Foundation, Registered, and Certified. Breeder seed will be maintained by roguing Breeder seed fields. The U.S. Department of Agriculture will not have seed for distribution.

Vista appears stable and uniform during seed increase. Less than 0.1 percent of the plants were rogued from Foundation and Breeder seed fields. It is expected that less than 0.1% (1:1000) variant plants (3 to 7 cm taller) may be encountered in subsequent generations.

Exhibit B. Novelty Statement

Vista is most similar to the hard red winter wheat cultivar Redland, but it can be distinguished by the following characteristics.

1. Vista is shorter (12 cm) than Redland (Table 1).
2. In data provided by Dr. Don McVey of the USDA Cereal Rust laboratory, Vista contains Sr6, Sr17, and Sr36 genes which convey resistance to stem rust, whereas Redland contains Sr5, Sr17, and Sr24.
3. In data provided by Dr. Jim Hatchet, USDA-ARS and Department of Entomology, Kansas State University, Manhattan, KS 66506, Vista is resistant to the Great Plains Biotype and Biotype C, and expresses a heterogeneous reaction to Biotype B of Hessian fly which indicates it contains H3 derived from IL#1 or Ottawa. Redland is only resistant to the Great Plains Biotype.
4. The penultimate leaf of Vista is shorter (22.6 ± 0.4 cm) and narrower (11.1 ± 0.2 mm) than Redland (24.0 ± 0.4 cm long and 11.9 ± 0.2 mm wide).
5. Vista has a longer (8.0 ± 0.5 mm) and wider (3.7 ± 0.5 mm) glume than Redland (7.10 ± 0.06 mm long and 3.30 ± 0.04 mm wide).
6. Vista has a longer beak (6.0 ± 2.1 mm) than Redland (1.49 ± 0.07 mm).

Exhibit C. See Attached Sheet

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Board of Regents, University of Nebraska and USDA-ARS		FOR OFFICIAL USE ONLY	
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Lincoln, NE 68583-0745 Washington, D.C. 20250		PPPO NUMBER 9300284	VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., or) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____ 1 = SOFT 2 = HARD 3 = OTHER (Specify) _____

1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
 NO. OF DAYS LATER THAN 4 = LEMHI 5 = HUGAINE 6 = LEEDS
7 = Redland

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH
 CM. TALLER THAN 7 = Redland
 CM. SHORTER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = HUGAINE 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 = YELLOW 2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT
 Wax bloom: 1 = ABSENT 2 = PRESENT
 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
 Internodes: 1 = HOLLOW 2 = SOLID
 NO. OF NODES (Originating from node above ground) CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT
 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify) _____ Flag leaf: 1 = NOT TWISTED 2 = TWISTED
 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT Wax bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
 MM. LEAF WIDTH (First leaf below flag leaf) CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:

☐ 3 Density: 1 = LAX 2 = DENSE 3 = Middense

☐ 2 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) _____

☐ 4 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

☐ 6 ☐ .5 CM. LENGTH

☐ 8 ☐ .9 MM. WIDTH

12. GLUMES AT MATURITY:

☐ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
3 = LONG (CA. 9 mm.)

☐ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
3 = WIDE (CA. 4 mm.)

☐ 4 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
4 = SQUARE 5 = ELEVATED 6 = APICULATE

☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☐ 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

☐ 3 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

☐ 1 Check: 1 = ROUNDED 2 = ANGULAR

☐ 3 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☐ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
4 = BROWN 5 = BLACK

☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

☐ 5 ☐ .6 MM. LENGTH

☐ 3 ☐ .0 MM. WIDTH

☐ 3 ☐ 2 GM. PER 1000 SEEDS

17. SEED CREASE:

☐ 1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
2 = 80% OR LESS OF KERNEL 'CHRIS'
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☐ 1 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
2 = 35% OR LESS OF KERNEL 'CHRIS'
3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 2 STEM RUST (Races) Sr6, Sr36 ☐ 2 LEAF RUST (Races) Lr3, Lr16

☐ 0 STRIPE RUST (Races) ☐ 0 LOOSE SMUT

☐ 0 POWDERY MILDEW ☐ 0 BUNT

☐ OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = Moderately Resistant

☐ 0 SAWFLY ☐ 0 APHID (Bydv.)

☐ 0 GREEN BUG ☐ 0 CEREAL LEAF BEETLE

☐ OTHER (Specify) _____ HESSIAN FLY
RACES: }

☐ 2 GP ☐ 1 A ☐ 3 B ☐ 2 C
☐ 1 D ☐ 1 E ☐ 1 F ☐ 1 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Redland	Seed size	Redland
Leaf size	Siouxland	Seed shape	Arapahoe
Leaf color	Redland	Coleoptile elongation	Abilene
Leaf carriage	Redland	Seedling pigmentation	Redland

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1963, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the Handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

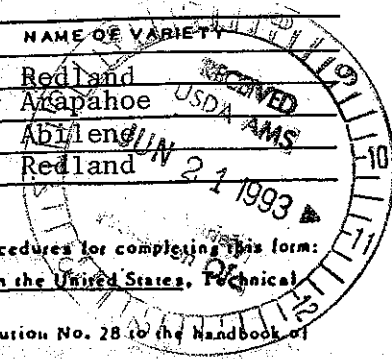


Exhibit D. Additional Description of the Variety:

Vista is an awned, white glumed cultivar. The awns are usually white, but in some environments may have a bronze cast. The spike is middense and generally fusiform but may be tapering to clavate. The foliage is blue-green with a waxy bloom at anthesis. The glume is midlong and midwide to wide. The glume shoulder is midwide and rounded to square. The beak is acuminate and moderately long. The kernel is short, red colored, hard textured, and elliptical to ovate. The kernel has no collar, rounded cheeks, midsize germ, large brush, and a narrow, shallow crease.

Vista has been tested in Nebraska yield nurseries starting in 1988, and in the Uniform Southern Regional Winter Wheat Performance Nursery in 1990 and 1991. In four years of testing (17 location-years) in the Nebraska Intrastate Nursery, Vista's grain yield (2570 kg/ha) was similar to 'Rawhide', 11% more than 'TAM107', and 2, 3, and 4% less than 'Arapahoe', 'Redland', and 'Siouxland', respectively. In two years of testing (1991 and 1992) in the Nebraska Fall-Sown Small Grain Variety Tests (28 location-years, Table 1), Vista (3050 kg/ha) was 4, 5, 11, 13, and 14% higher yielding than Redland, Arapahoe, Siouxland, Rawhide, and TAM107, respectively. In the Uniform Southern Regional Winter Wheat Performance Nursery, Vista (3680 kg/ha) was the highest yielding line of those tested in both years across the region (48 location-years) and yielded 2% more than TAM107. Vista is best adapted to the northern high plains region (southwest Nebraska, western Kansas, and northeastern Colorado). In this region (10 location-years), Vista (3420 kg/ha) yielded 6% more than TAM107.

Vista is a semidwarf cultivar that is one cm shorter than TAM107 and 15 cm shorter than 'Scout 66', a conventional height wheat. Vista has a short coleoptile (63 mm) compared to TAM107 (80 mm) and Scout 66 (103 mm). Vista is not targeted for very dry wheat growing conditions (less than 38 cm of annual precipitation) because its short coleoptile and short plant height may cause seedling emergence and harvest difficulties. Vista (3390 kg/ha) may also be adapted to late planted, irrigated fields (2 location-years) in western Nebraska where it is 3% higher yielding than Arapahoe and 21% higher yielding than TAM107. Under irrigated conditions, the shorter stature of Vista is beneficial because it does not become too tall for harvest as often occurs with taller wheats.

In most years, the grain volume weight of Vista has been similar to Arapahoe, less than Siouxland and Rawhide, and superior to Redland. The winterhardiness of Vista is adequate for Nebraska growing conditions, superior to 'Vona', 'TAM200', and Rawhide, and similar to slightly less than Scout 66. Vista is a medium-late cultivar, similar in anthesis date to Arapahoe and Redland, 1 d later than Siouxland, 2 d later than Rawhide, and 5 d later than TAM107. The straw strength of Vista is less than Redland, Siouxland, 'Abilene', and 'Thunderbird', and most similar to TAM200 which under Nebraska conditions may lodge early (shortly after anthesis) if there is lush spring growth.

Vista carries Lr3 and Lr16, and is moderately resistant to the currently prevalent races of leaf rust (incited by Puccinia recondita Roberge ex Desm.). Vista is resistant to the Great Plains Biotype and Biotype C, and expresses a heterogeneous reaction to Biotype B of Hessian fly (Mayetiola destructor Say) which indicates it contains H3 derived from IL#1 or Ottawa. It is moderately resistant to stem rust (incited by P. graminis Pers. : Pers.), containing genes Sr6, Sr17, and Sr36. Vista is susceptible to soilborne mosaic virus. Based on greenhouse testing, Vista appeared to be more tolerant than Brule or Redland to wheat streak mosaic virus.

Based on composite samples from Nebraska, the wheat and flour protein content of Vista is similar to Scout 66 and less than Arapahoe (Table 5). Vista has strong mixing characteristics as determined by the mixograph. With the exception of a low water absorption, the other milling and baking characteristics of Vista are acceptable, equal to or better than Scout 66 and Arapahoe, and superior to TAM200 and TAM107. The kernels of Vista have been classified by the Federal Grain Inspection Service as being hard red winter wheat.

Tables supporting novelty statement.

Table 1. Plant Height from 1991 and 1992 State Variety Trials (24 environments)

Redland	83.8 cm \pm 2.1 cm
Vista	71.9 cm \pm 2.1 cm

Tables supporting additional description of variety.

Table 1. Yield (bu/a) from State Variety Trials:

	Yield bu/a										IRR	ECO
	1991					1992						
	SE	SC	WC	PAN	AVG	SE	WC	PAN	AVG	AVG		
	(1)*	(2)	(6)	(4)	(13)	(2)	(5)	(4)	(11)	(24)		
Arapahoe	37	49	44	47	45.2	48	49	33	43.0	44.2	49.0	26.5
Rawhide	45	47	35	42	39.8	28	55	33	42.1	40.8	42.5	23.5
Redland	43	49	43	45	44.5	49	56	32	46.0	45.2	44.5	25.0
Siouxland	44	39	40	43	41.1	41	48	36	42.4	41.7	42.5	22.5
TAM107	51	46	33	41	38.8	30	52	38	42.9	40.7	40.0	21.0
Vista	41	53	43	48	45.9	48	54	39	47.5	46.6	50.5	26.0

* Number of locations

Table 2. Test weight (lbs/bu), anthesis date, and coleoptile length.

	Test Weight lbs/bu					Anthesis	Coleoptile
	1991	1992	IRR	EC	Date	Length	
	AVG	AVG			AVG	AVG	(mm)
	(13)*	(11)			(24)	(2)	(2)
Arapahoe	57.8	57.6	57.8	58.5	58.8	25.3	
Rawhide	57.4	58.0	57.7	59.8	59.7	23.0	
Redland	57.5	57.9	57.7	58.5	58.5	25.0	
Siouxland	57.5	57.9	57.7	59.2	58.6	23.7	
TAM107	56.6	58.4	57.4	58.1	58.1	19.8	80
Vista	57.6	57.9	57.7	59.1	59.0	25.3	63
Scout 66							103

* Number of locations

Table 3. Plant Height from State Variety Trials (in):

	Plant Height in										IRR	ECO
	1991					1992						
	SE	SC	WC	PAN	AVG	SE	WC	PAN	AVG	AVG		
	(1)*	(2)	(6)	(4)	(1)	(2)	(5)	(4)	(11)	(24)		
Arapahoe	32	40	36	34	35.7	33	31	26	29.5	32.9	31.5	24.0
Rawhide	33	41	36	34	35.9	26	32	26	28.7	32.6	28.5	23.0
Redland	34	41	36	34	36.0	32	31	26	29.4	33.0	30.5	23.5
Siouxland	36	41	39	36	38.2	33	35	27	31.7	35.2	34.0	26.5
TAM107	31	36	32	29	31.6	27	28	23	26.0	29.0	26.0	20.5
Vista	25	36	32	28	30.9	28	27	22	25.4	28.3	25.5	20.0

* Number of locations

Table 4. Plant and Kernel Characteristics

Seed Length	5.7 ± 0.1 mm
Seed Width	3.0 ± 0.04 mm
Glume Length	8.0 ± 0.1 mm
Glume Width	3.7 ± 0.1 mm
Beak Length	6.0 ± 0.4 mm
Spike Length	6.5 ± 0.1 cm
Spike Width	8.9 ± 0.2 mm
Spike Density	38.8 ± 0.4 mm

Table 5.

HARD RED WINTER WHEAT

MILLING AND BAKING PROPERTIES

NAME	YEARS TESTED	WHEAT PROTEIN %	FLOUR PROTEIN %	MILL YIELD %	FLOUR ASH %	MIXOGRAPH			BAKING					
						PEAK TIME min	TOLERANCE SCORE	ABSORP-TION %	BROMATE ppm	MIX TIME min	LOAF VOLUME cc	EXTERNAL APPEARANCE	CRUMB GRAIN	CRUMB TEXTURE
Vista	87-91	12.2	11.3	71.1	0.43	5.1	4	58.9	3	5.9	942	VG-	G+	G+
ARAPAHOE	87-91	13.0	11.8	70.8	0.45	4.8	3+	61.2	7	5.5	907	G	G	G
SCOUT 66	87-91	12.2	11.4	72.4	0.40	3.6	3	62.5	10	3.7	904	G-	G	G-

9300284

Exhibit E. Statement of the Basis of the Applicant's Ownership

The University of Nebraska and the USDA/ARS are the applicants for protection in the case of Vista hard red winter wheat being:

a) Vista is the product of the cooperative state-federal breeding program located in the Agricultural Research Division (ARD), University of Nebraska. Drs. P. Stephen Baenziger, John W. Schmidt, and David R. Shelton; and Dr. C. James Peterson, regular employees of the Nebraska ARD (Department of Agronomy) and the USDA/ARS (stationed and functioning also as staff members in the Department of Agronomy), respectively, have bred the named cultivar for and within these incorporated institutions.

b) By established policy, release of cultivars developed by the Nebraska ARD is the responsibility of the Nebraska ARD as the agency providing staff, funds, and facilities for the breeding program.